

## Chapter Three

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### 3. Installation Restoration Program Response Actions

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This chapter provides detailed discussion of the primary response actions associated with the Installation Restoration (IR) Program. The actual sequence, timing and scope of IR Program actions must be tailored to site conditions and Environmental Restoration, Navy (ER, N) funding priorities. Some guidelines include:

A site will consist of a single unit where hazardous substances have been deposited, stored, disposed of, or placed. A site is the basic unit for planning and implementing "response actions";

Multiple sites grouped according to type, potential for a common remedy, proximity, contamination of a common resource, or funding priority should be evaluated or remedied together as an operable unit (OU); and

ER, N funding priorities, and the respective sites' relative risk rankings will influence how many sites can be addressed together and in what time frame.

The definition of "response" encompasses any investigation, evaluation, decision-making, or implementation step.

#### 3.1 REMEDIAL ACTION PROCESS

The steps that make up the Remedial Action Process and the sequence in which they are normally undertaken are illustrated in Figure 3-1.

The Remedial Action Process is the primary alternative for most IR Program sites. It provides a full, careful progression through the four phases of identification, investigation, cleanup, and closeout. Brief descriptions of the four phases are:

Identification or PA/SI - Includes the steps in discovering, assessing, and reporting on a potential new IR Program site;

Investigation or RI/FS - Includes the steps for analyzing in detail the nature of the site, contaminants, and potential receptors; determining the regulatory requirements and cleanup objectives to be applied to the site; and identifying, analyzing, and selecting the remedial action approach for cleaning up the site;

Cleanup or RD/RA - Includes the detailed engineering design step for a selected remedial action, the implementation of that remedial action, and any ongoing post-construction activities necessary to fully meet the cleanup objectives; and

Site Closeout - Can be accomplished at any time during the process if the DON determines that No Further Action (NFA) is needed at the site. The DON formally requests regulatory concurrence concerning the NFA determination.

Figure 3-2 provides a graphic representation of how other actions, including Removals, No Further Action, Site Monitoring, and Operable Units, relate to the Remedial Action Process.

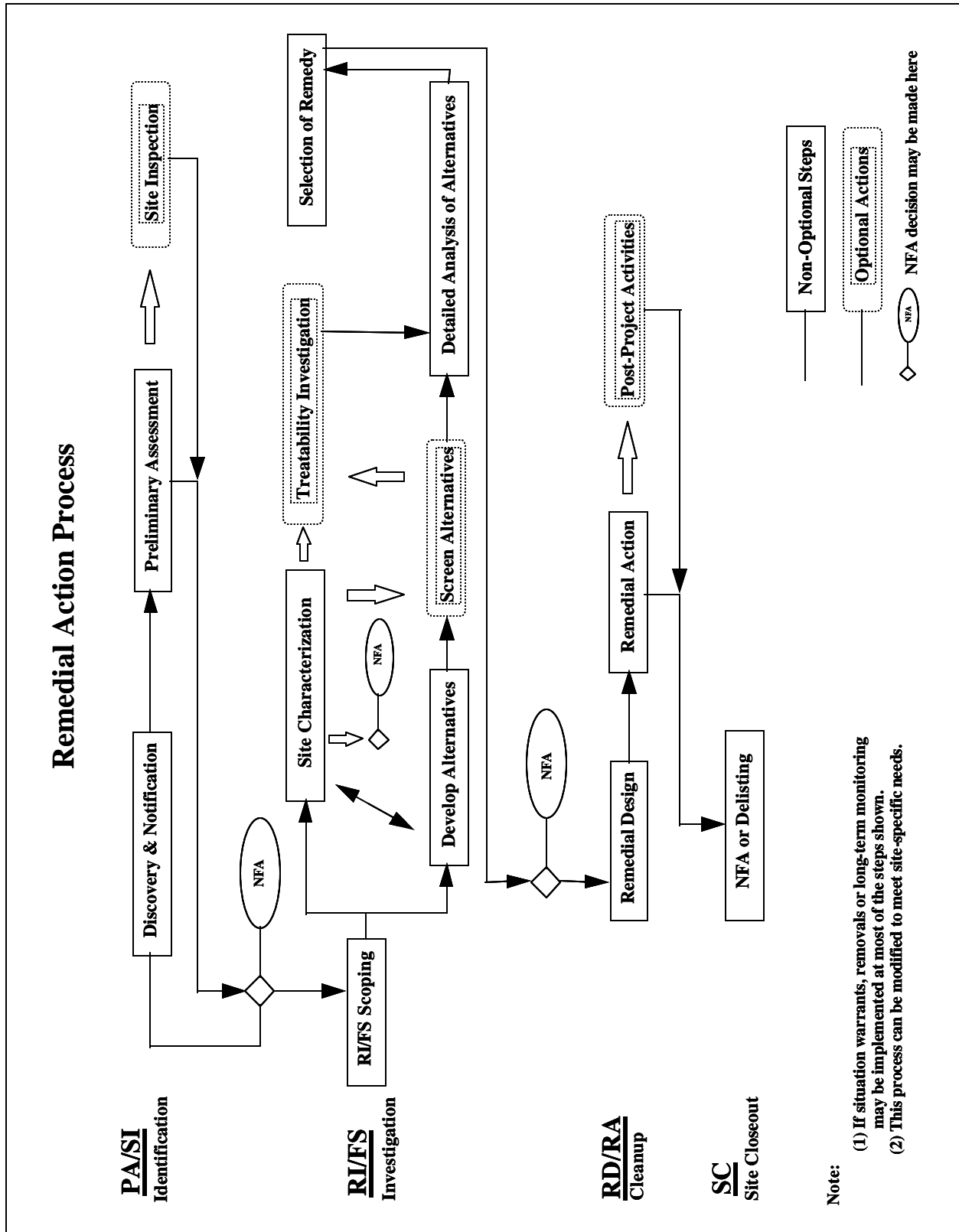
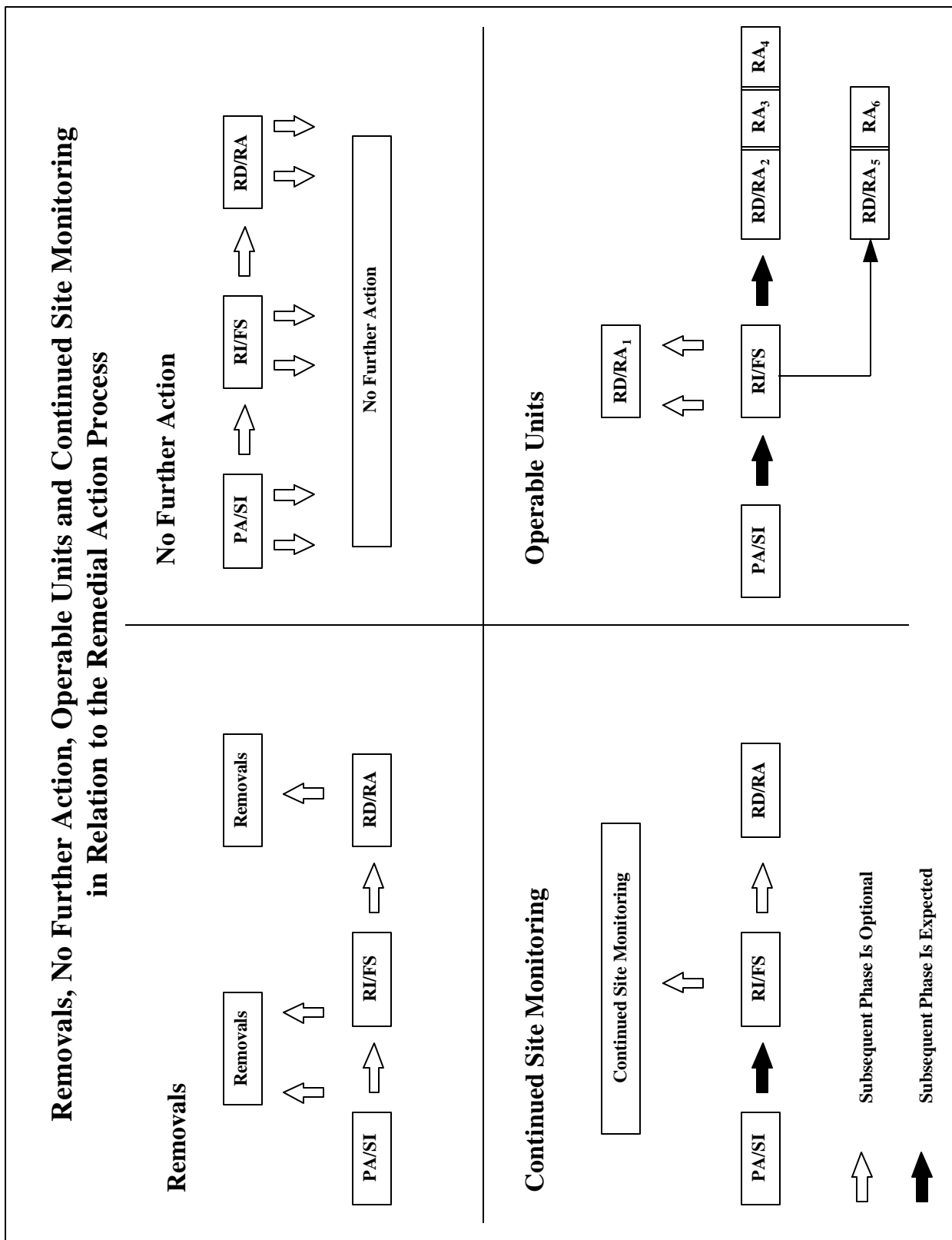


Figure 3-1: Remedial Action Process



**Figure 3-2: Removals, No Further Action, Operable Units and Continued Site Monitoring in Relation to the Remedial Action Process**

### 3.2 REMOVAL ACTION

CERCLA § 104, 42 U.S.C. § 9604 (2001) provides that removal actions and subsequent remedial actions should occur whenever there is a release or the threat of a release of a hazardous substance or any pollutant or contaminant that presents a substantial danger to the public health and welfare. 42 U.S.C § 9604 (a)(1) (2001).

The DON, under the authority of CERCLA and the NCP, will take an appropriate removal action to abate, minimize, stabilize, mitigate, or eliminate the release or threat of release on or from DON facilities, if there is a threat to public health or welfare or the environment. Removals may occur if any of the following criteria are met:

A substantial threat of release of any pollutant which may present an imminent and substantial danger to human health (when contaminant concentrations concerning human health standards are exceeded, the threat is imminent);

The source of the contamination can be removed quickly and effectively;

Access to contamination can be limited (human exposure is substantially reduced); or

A removal action is the most expeditious manner of remediating the site.

40 C.F.R. § 300.415 (2000). See OPNAVINST 5090 1.B CH-2, Paragraphs 15-3.11 and 15-3.25 (9 September 1999).

The removal action should be compatible with future remedial actions and achieve applicable or relevant and appropriate (ARARs) cleanup requirements. ARAR compliance is dependent upon the urgency of the situation, and the scope of the removal action to be conducted. 40 C.F.R. § 300.415 (2000).

The following factors need to be considered to determine the appropriateness of a removal action:

Actual or potential exposure of nearby human populations, animals, or food chains to hazardous substances, pollutants, or contaminants;

Actual or potential contamination of drinking water supplies or sensitive ecosystems;

Hazardous substances, pollutants, or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;

High levels of hazardous substances, pollutants, or contaminants in soils largely at or near the surface, that may migrate;

Weather conditions that may cause hazardous substances, pollutants, or contaminants to be released or to migrate;

Threat of fire or explosion;

Availability of other appropriate Federal/State response mechanisms to respond to a release; or

Other situations or factors which may pose threats to public health, welfare, or the environment.

40 C.F.R. § 300.415 (2000).

Examples of removal actions providing representative responses to removal requirements include:

Fences, warning signs, or other security or site control precautions being put in place if humans or animals have access to the release;

Run-off or run-on diversion controls used to prevent the further spread of contamination where precipitation or run-off from other sources may enter the release area;

Capping of contaminated soils or sludges should be employed where needed to reduce migration of hazardous substances into soil, groundwater, and air; and

Chemicals, absorbents, and other materials should be used to retard the spread of the release or mitigate its effects, 40 C.F.R. § 300.415 (2000).

Removals implemented in response to an imminent threat need not be compatible with future remedial actions, need not be shown to be cost-effective, and need not achieve ARARs if the urgency of the situation precludes fulfilling these goals. These goals, however, should be considered prior to implementation of a removal.

If the DON determines that the removal action will not fully address the threat or potential threat posed by the release, the DON will ensure an orderly transition

from removal to remedial response activities. All decisions to implement removals under CERCLA authority must be documented. Documentation may follow the decision to implement or even the action itself, depending on the exigency of the situation.

A removal may or may not be the final action for a site. This situation is dependent on whether any hazardous substances, pollutants, or contaminants remain after the removal. All removal actions should include verification sampling.

EPA, through guidance and policy, has defined three types of removal action described below: emergency, time critical, and non-time critical removals.

### **3.2.1 Time Critical Removal Actions**

Time critical removal actions are those actions that must be conducted within six months. No detailed study is required to plan and implement an action to mitigate the threat. Time critical removal actions historically have been small scale and interim actions but can be large scale and final actions. EFD/EFA responsibilities for time critical removal actions include:

Coordinating actions to be taken with the affected installation;

Ensuring that an administrative record has been established for the action to be taken at the site and the public has been informed of its existence by publishing notice of the proposed action in a major local newspaper within 60 days of the initiation of the on-site removal activity;

Providing for a 30-day comment period following publication;

Preparing written responses to significant comments for inclusion in the administrative record file;

Ensuring that information relating to the removal is added to the record and that the public is informed of this addition; and

Commencing the on-site removal action.

For removal actions where on-site action is expected to extend beyond 120 days from initiation of on-site activities, the RPM will assist the installation in establishing a formal Community Relations Plan including designation of a spokesperson to inform the community of actions taken, respond to inquiries, solicit community concerns about the IR Program through interviews, and establish a local information repository at or near the site. 40 C.F.R. § 300.415 (n)(200).

### **3.2.1.1 Emergency Removals**

Emergency removal actions are a type of time critical removal action that must be conducted immediately. Emergency removal actions can be initiated using verbal authorization. For Federal facilities, removal actions that must occur within two weeks may be considered an emergency removal action. There are two sets of requirements in such a situation: installation requirements and EFD/EFA requirements. The following highlights procedures required of responders in each case:

#### Installation Requirements

Notify its Navy On-Scene Coordinator or Marine Corps On-Scene Coordinator of any emergency situation involving a hazardous substance removal situation;

Notify the chain-of-command and cognizant EFD/EFA of any emergency removal situation. The EFD/EFA will notify NAVFAC who in turn will notify CNO (N45) and/or CMC (LFL); and

Notify the EPA, State, and local officials as soon as practicable.

#### EFD/EFA Requirements

If there is sufficient time;

Prepare documentation briefly summarizing the conditions at the site and identifying the selected removal action and the rationale for the response action;

Start on-site removal action;

Following initiation of the removal action and preparation of documentation, prepare and publish a notice of availability of the administrative record in a local newspaper within 60 days of initiation of removal action;

Provide for a 30-day comment period;

Include written responses to significant comments in the administrative record file; and

Ensure that a formal Community Relations Plan is in effect if the emergency removal action is expected to extend beyond 120 days from the initiation of the on-site removal action.

For situations where there is insufficient time to prepare documentation prior to initiating removal action, obtain verbal approval from the installation Commanding Officer/ Commanding General (CO/CG) or their designee. For such a situation, prepare documentation following the removal action. 40 C.F.R. § 300.415(2000).

### **3.2.2 Non-Time Critical Removal Actions**

A non-time critical removal action is a removal action that has a planning period of at least six months before on-site activities must be initiated.

Engineering Evaluation/Cost Analysis (EE/CA) or its equivalent is required for Non-Time Critical Removal Actions.

EFD/EFA responsibilities for non-time critical removal actions include those actions required for a time-critical removal action and the following:

Prepare an EE/CA providing a brief analysis of the removal alternatives for the site. Recommended criteria for evaluating potential removal alternatives include effectiveness of the action to minimize or stabilize the threat to public health, consistency with anticipated final remedial action, consistency with ARARs, cost-effectiveness and implementability. Provide the EE/CA to the installation CO/CG for review;

Develop a Sampling and Analysis Plan with both field sampling and quality assurance/quality control (QA/QC) components and forward the plan to EPA for NPL sites or the State for non-NPL sites for review and comment. Develop a Health and Safety Plan and

forward to the regulators if requested or required by negotiated agreements. Continue with the removal program activities if the regulator does not provide timely review, noting in the administrative record that the DON formally provided the regulator the opportunity to review the plans; and

Prepare a notice of availability and brief description of the EE/CA for publication in a major local newspaper of general circulation and provide at least a 30-day comment period. The installation has the responsibility to publish the notice of availability and a brief description of the EE/CA.

### **3.2.3 Interim Removal Actions vs. Final Removal Actions**

Response actions are characterized by the extent to which the threats are mitigated by the action, either interim or final. A removal action can be used for fast and significant reductions in risk and to mitigate long-term threats. Economics play a very important role in determining whether to take an interim or final response action, and it also plays a role in determining whether to conduct a removal action or collect additional data. Economic considerations may also impact the extent of the action that is taken. The following items should be considered when deciding upon whether to take an interim or final action: 1) the cost of remobilizing to conduct the final action, 2) the uncertainty associated with acceptance of cleanup levels as final, and 3) the availability of funds to conduct the action.

For Emergency, Time Critical and Non-Time Critical removals, the EFD/EFA prepares an Action Memorandum (which

is supported with an EE/CA for Non-Time Critical removals). The Action Memorandum for an interim action specifies what threat is being addressed and how long the action will remain effective. The documentation should state what type of final action may be conducted and how the removal action contributes to the implementation of the final action. The Action Memorandum for final actions specifies the performance standards or cleanup levels to be reached by the actions. Both time critical and non-time critical removal actions can be final in nature. Emergency actions are hardly ever final actions.

For additional information on Action Memorandums, see section 5.14.1.

### **3.2.4 Superfund Accelerated Cleanup Model (SACM)**

To address public and congressional criticism that cleanups were too slow, in 1992, the EPA created the Superfund Accelerated Cleanup Model (SACM) to reduce the time and money spent at Superfund sites, while continuing to protect human health and the environment. SACM removes the artificial distinctions between removal, site evaluation, and long-term remediation and relies upon the use of remedies that have proven appropriate based upon past experiences. While remaining consistent with existing CERCLA and NCP response regulations, SACM streamlines the response process by eliminating the unnecessary duplication of studies during the remedy selection phase.

Instead of conducting a series of separate site assessments, SACM integrates them

in one continuous site assessment with one report. In addition, where EPA once categorized all actions as either remedial or removal, it now conducts early (less than 5 years duration) and long-term (more than 5 years duration) actions using either authority. This allows for earlier remedial actions and earlier risk reduction. Presumptive remedies are a key component of SACM. They represent a way to streamline remedy selection based on experience at certain types of sites. Prior to SACM, EPA viewed each NPL site as unique and required a site-specific review of remedial alternatives. The EPA has learned from experience that many sites have similar contaminated media, types of wastes, or historical industrial practices, and therefore, will most likely require use of similar technologies in the remedy.

For more information on SACM see the website below:

[www.epa.gov/oerrpage/superfund/sites/topics/reauth.htm#sacm](http://www.epa.gov/oerrpage/superfund/sites/topics/reauth.htm#sacm)

## **3.3 NO FURTHER ACTION**

No Further Action (NFA) sites are sites at which it has been determined that all needed investigation or remediation has occurred and no additional action is necessary. The DON must document and substantiate this decision. If reasonable investigation efforts indicate that no significant release of hazardous substances, pollutants, or contaminants have occurred or may occur; or that all remedial action has been accomplished a NFA determination is appropriate. A NFA decision can be made at any stage in the remedial process, but this



decision must be defensible and properly documented.

The NFA procedure may be applied at both NPL and Non-NPL sites based upon appropriate investigation. For NPL or proposed NPL sites, EPA concurrence is required; for Non-NPL sites, EPA and State concurrence is recommended. The investigative reports documenting the decision should be forwarded to EPA and State regulators for concurrence. Decisions to cease evaluating the site may be made if:

On the basis of a PA, all available data indicate that no hazardous substances, pollutants, or contaminants were released or are likely to be released; or

On the basis of an SI, results of a sampling program or other information indicate that there has not been, nor is there likely to be, a release; or

On the basis of a Baseline Risk Assessment, it is shown that the release poses no significant threat; or

On the basis of a complete RI/FS, the NFA alternative is the preferred alternative considering all the criteria applicable to remedy selection.

The NFA category should also be used to describe those sites at NPL installations where the results of site screening, conducted at the initiation of the RI/FS and under the Federal Facility Agreement, demonstrate that NFA is warranted.

The NFA alternative should be substantiated with an assessment of risk to human health and the environment taking into consideration health and

environmental impacts if NFA is taken. The assessment, though usually more qualitative than quantitative, should be based on known characteristics of the contaminants (toxicity, persistence, mobility), potential pathways of contact/transport (direct contact, air, groundwater, or surface water routes, fire or explosion), types and number of targets, and maximum concentration levels of exposure (as contained in ARARs). This assessment is not a health assessment, which is part of the overall risk assessment process, nor does it have to involve highly analytical procedures such as modeling.

PA, SI, or RI reports created during the investigation or cleanup of the site along with EPA concurrence at NPL sites and State concurrence (or a copy of the letter to the regulator which requested concurrence) are to be included in the administrative record to document an NFA decision and actions taken to substantiate the NFA decision.

### **3.3.1 Site Closeout**

The goal of the IR Program is to achieve environmentally protective site closeouts in a timely, efficient, and cost effective manner. Site Closeout implies that the DON has completed active management and monitoring at a site, and no additional funds are expected to be expended at the site unless the need for additional remedial action is demonstrated. Site closeouts are initiated when the DON determines that NFA is appropriate at a site. The site is considered "closed out" when regulatory agency concurrence is obtained or when all reporting and document handling requirements are met, and when NPL de-listing (when applicable) has occurred.

For more information about Site Closeout, reference the DoD/EPA guidance document titled *The Environmental Site Closeout Process Guide*. This document can be downloaded from: <http://web.ead.anl.gov/ecorisk/closeout/docs/section1.pdf>

In addition, the Civil Engineer Corps Officers School (CECOS) offers training on Site Closeout issues.

### **3.4 SPILL RESPONSE VS. IR ACTIONS**

The IR Program responds to contamination resulting from past practices and operations. It does not provide a framework for planning or responding to oil discharges and hazardous substance releases from current operations. The NCP establishes the national framework for planning and responding to oil discharges and hazardous substance releases.

Accordingly, contingency planning and spill responses are not part of the IR Program but are included in ongoing installation operations.

Some IR Program sites are locations where contaminants remained after spill response actions were completed. This occurs when those contaminants are present in concentrations high enough to pose a threat to human health or the environment and have been included as IR sites.

When IR Program investigations or cleanups are being conducted, appropriate spill prevention and response plans should be developed for possible IR Program project impacts. For

example, if contaminated materials from an old site are being containerized for transport off base, provisions for containment and cleanup of spillage or residues from that operation should be part of the IR Program project. See OPNAVINST 5090.1B CH-2, Chapter 2 (September 9, 1999).

### **3.5 CLEANUP STANDARDS FOR REMOVALS**

Several considerations are very important to establish cleanup levels for removal actions. These considerations represent a spectrum of technical, legal, economic, and public involvement issues.

#### Cleanup Standards

Removal actions with readily available cleanup standards are much easier to conduct than actions with no cleanup standards. Sources of cleanup standards are:

Regulatory levels of ARARs - Other environmental statutes and regulations provide significant cleanup levels for removal actions through the ARAR identification process. For example, the Resource Conservation and Recovery Act, the Clean Water Act, and the Safe Drinking Water Act provide cleanup levels for various situations;

Levels calculated using the Risk Assessment Process - The standard Risk Assessment Process can be used to calculate cleanup levels for those contaminants that do not have regulatory cleanup levels; and

Cleanup levels used in other CERCLA Decision Documents - Other CERCLA

removal and remedial action decision documents can be used to select cleanup levels for similar situations and similar contaminants.

#### Compatibility with Remedial Action

Removals implemented just for source control or for limiting exposure should be compatible with any remedial action that may be selected or be inexpensive enough to be considered expendable. Removals implemented in response to an imminent threat need not be compatible with future remedial actions, be cost-effective, or achieve ARARs if the urgency of the situation precludes fulfilling these goals. All decisions to implement removals under CERCLA authority must be documented.

#### Future Land Use

Future land use assumptions play an important role in establishing removal action cleanup levels. The following items affect future land use cleanup assumptions:

Stringent Cleanup - The future land use assumed is directly linked to the stringency of cleanup levels; and

Land Use Assumptions Guidance - In May 1995, EPA issued a guidance document on determining future land use assumptions for CERCLA response actions. DoD subsequently issued a policy memorandum that provided specific guidance on how to incorporate future land use into the environmental restoration process. DoD, *Responsibility for Additional Environmental Cleanup after Transfer of Real Property* (25 July 1997). Anticipated land use assumptions are typically made before completing

any CERCLA investigation. The assumptions are generally based upon numerous factors, "...including statutory land use designations, contractual arrangements for transfer of property, zoning, community reuse plans, and installation master plans." DoD, *Policy on Land Use Controls Associated with Environmental Restoration Activities* (17 Jan. 2001).

#### Risk Screening

Risk screening is used to determine if the contamination is a threat. Risk screening compares site data to screening levels or criteria to determine if a potential problem may exist. Preliminary remediation goals can be used for risk screening.

#### Risk Evaluation

Risk evaluation in the removal program is analogous to the Baseline Risk Assessment in the remedial program. Risk evaluations vary in scope and detail from simple comparisons of site contamination to full-blown risk assessments addressing all contaminants and all pathways. The risk evaluation conducted as part of the EE/CA is called a streamlined risk evaluation.

### **3.6 MONITORING**

The data collected from monitoring enable the DON to track the progress of remediation, track the migration or stability of contaminant plumes, and ultimately determine when the project goals have been met and the site can be closed out. Without good monitoring data, RPMs cannot make the decisions they need to properly manage their projects.

In general, there are two types of monitoring: Remedial Action monitoring and Long-Term Monitoring (LTM). Remedial Action monitoring is conducted during the Remedial Action Operation (RAO) phase to monitor the progress of the remediation and to track the migration of contaminants at a site. The data collected from this type of monitoring are used to determine when the cleanup goals, also known as Response Complete (RC) are met. These data are also used to evaluate the effectiveness of the remedial system and to determine whether modifications are needed to help achieve RC most cost-effectively and timely. Long-Term Monitoring (LTM) occurs after RC. LTM may be required to track the presence and migration of contaminants left on-site after RC, or it may only be necessary for a short duration in order to confirm the remedial action will remain protective of human health and the environment. At times, monitoring may also be used at a site between response actions or when no other response action is appropriate until information or site status changes.

Before designing and implementing a monitoring plan, the specific objectives of the project must be defined. The following are some typical monitoring objectives:

- Determine if contamination is migrating off site or off base;
  - Determine if contamination will reach a receptor;
  - Track contaminants exceeding applicable standard;
  - Track the changes in shape, size, or position of a contaminant plume;
  - Assess the performance of a remedial system (including monitored natural attenuation);
  - Assess the practicability of achieving regulatory limits; and
  - Satisfy regulatory requirements (such as those for landfill closure).
- The goals of the monitoring program should be defined and documented in a monitoring plan. The monitoring plan will be the definitive document for operational guidance on the monitoring program. The primary purpose of the monitoring plan is to specify how the monitoring program will be conducted in order to meet site-specific objectives. It allows for consistent data collection and comparability, and documents the monitoring approach in the event of installation, contractor, or regulatory personnel turnover.
- The following components should be included in the monitoring plan:
- Statement of program goals;
  - Current monitoring network;
  - Frequency and anticipated duration of monitoring;
  - Specific field procedures (e.g. purging, sampling, decontamination, and record keeping);
  - Analytical methods, sample handling requirements (e.g. containers, preservation), and quality

assurance/quality control (QA/QC)  
sample collection rates;

- Data handling and reporting procedures; and
- Decision criteria (including exit strategies) and review process to periodically optimize the program.

The monitoring program should be evaluated annually to ensure it is efficiently meeting the program goals as defined. It is important to remember that monitoring is only done in order to collect data that will help to make pertinent decisions about the sites. The annual monitoring program review will provide the opportunity to “optimize” the program.

The primary objective of optimizing monitoring programs is to reduce monitoring costs without compromising program quality or effectiveness. The optimization process focuses on collecting relevant data of appropriate quality to achieve program goals. This can be done by evaluating the following aspects of the monitoring program with respect to overall program goals:

- The number of monitoring points;
- The frequency and duration of monitoring;
- The analyte list and QA/QC samples;
- The sampling procedures; and
- The data evaluation, management, and reporting procedures.

It may be helpful to conduct annual reviews well in advance of budgeting for

the next fiscal year so that any changes in funding needs can be incorporated into the budget request in a timely manner.

For more information about monitoring and monitoring optimization, the “Guide to Optimal Groundwater Monitoring” developed by the DON, is available for download at <http://erb.nfesc.navy.mil/> (Navy Support, Work Groups, RAO/LTM).

### 3.7 OPERABLE UNIT

Operable Unit (OU), as defined in the NCP, is a discrete portion of a remedial response that manages migration or eliminates or mitigates a release, threat of a release, or pathway of exposure. 40 C.F.R. § 300.5 (2000). The cleanup of a site can be divided into a number of OUs, depending on the complexity of the problems associated with the site. The OU is a part of a remedial action that can be implemented separately, e.g., groundwater cleanup.

The OU represents one strategy for driving the administrative process of installation-wide environmental restoration. For both NPL and non-NPL sites, the number, composition, sequencing, and individual timeline structure of OUs must be optimized so that remedial actions are selected and taken in the most timely manner possible. OUs may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site.

Examples of OUs include:

Areas with similarly contaminated waste materials or media;

Areas in a similar geographic location;

Areas that may be remediated using similar techniques or within a similar time frame; and

Areas amenable to being managed in a single RI/FS.

Because the number and composition of OUs at an installation will need to be adjusted as investigations proceed, it is critical that an installation-wide approach be developed to define,

sequence, and schedule OUs. Whether OUs are implemented before or after selection of the final remedial action, they should be consistent with the final action and not preclude its implementation.

Establishing priorities and scheduling of OUs will also assist greatly in the remedial action. After the number and composition of OUs has been identified, the next step is to determine the sequence of administrative activities associated with each OU. OUs are subject to requirements for decision documentation, administrative records, information repositories, and public participation.